FAME
SPACECRAFT BUS
THERMAL CONTROL SUBSYSTEM
(TCS)

Sept. 2001

TIM

Mission Requirements

- Maintain all Bus component temperature limits through all mission phases and environments.
- Maintain Instrument interface temperature limits through all mission phases and environments.
- Maintain MLI surface flatness.
- Survive AKM soak-back temperatures for 1 hour following engine shutdown.
- Power (Nominal Voltage 30 ± 6 volts):

(Watts)	Operational	Survival	Launch
– Electronics	277	180	51
– Heaters	65	85	25

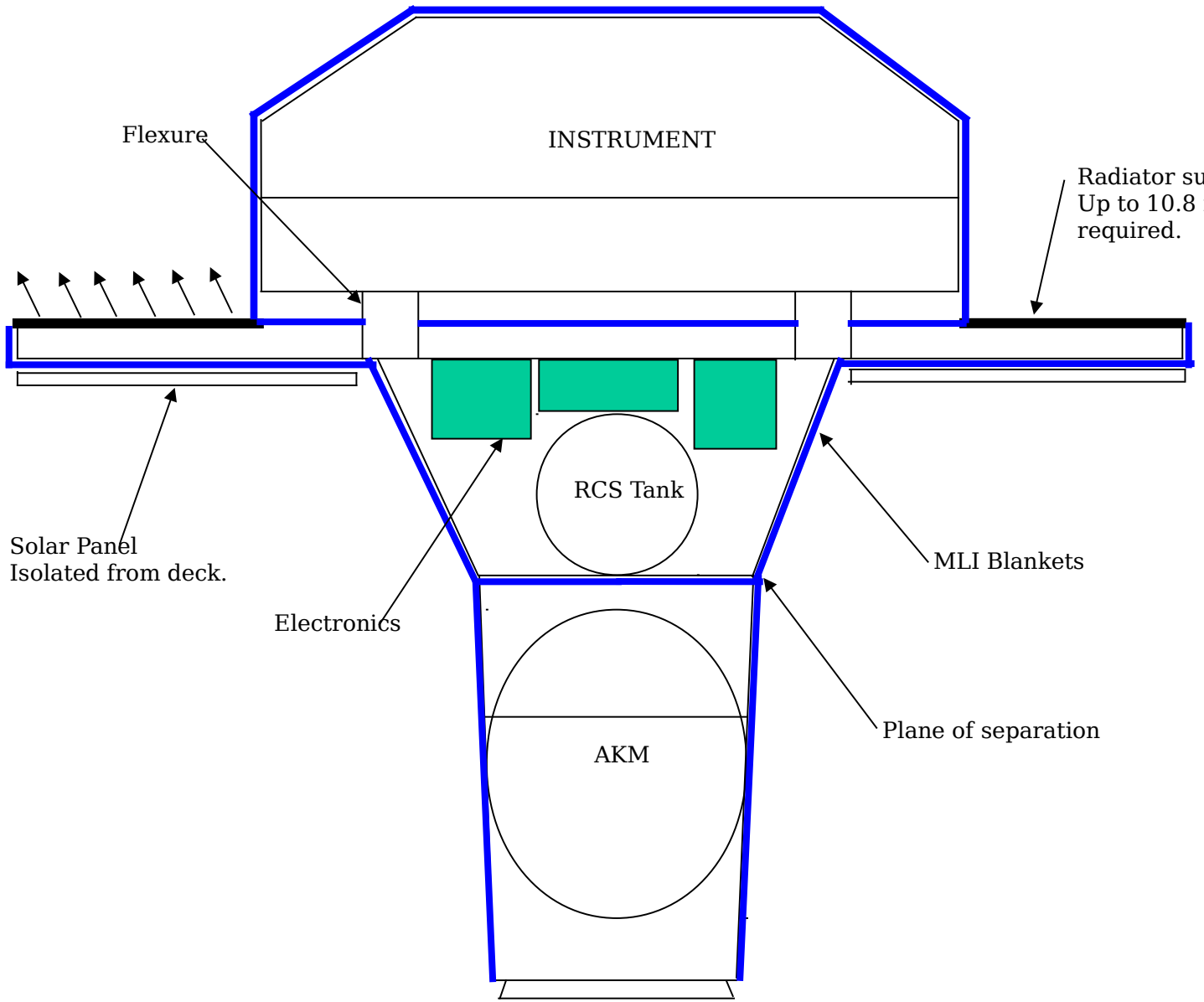
Environments

- Solar Flux 415 to 444 BTU/HR-sqft
- Albedo 0.21 to 0.30
- Earth IR 74 to 87 BTU/HR-sqft
- Eclipse Duration 71 min/day @20 days max
- Launch Vehicle 70F at Liftoff

  1135 W/m^2 at Fairing Jettison

  148F Peak Intrnl Fairing Temp
- Sun Angle to Spin Axis 35°

Baseline Design



Concerns/Schedule

- Electro-Static Discharge (Teflon Tape).
- AKM Soak-Back/Marmon Clamp Temperature.
- Battery Temperature/Location.

Task Name	Duration	Start	Finish
PDR	2 days?	Tue 10/30/01	Wed 10/31/01
CDR	4 days	Mon 8/5/02	Thu 8/8/02
TRR	1 day?	Mon 11/3/03	Mon 11/3/03
SHIP	4 days	Mon 8/9/04	Thu 8/12/04
LAUNCH	1 day?	Mon 10/4/04	Mon 10/4/04
TCS DESIGN / ANALYSIS	261 days?	Fri 8/10/01	Fri 8/9/02
Hardware Procurement	368 days?	Tue 1/15/02	Thu 6/12/03
Blanket Fabrication	367 days?	Fri 2/1/02	Mon 6/30/03
Thermal Integration	88 days?	Wed 4/16/03	Fri 8/15/03
Thermal Design Verification Test	12 days?	Fri 8/15/03	Mon 9/1/03
Spacecraft Complete	1 day?	Mon 11/3/03	Mon 11/3/03
System Level Testing	176 days?	Mon 12/1/03	Mon 8/2/04